SEQUENCE LISTING

<110> RUSCH, Douglas et al <120> ISOLATED HUMAN KINASE PROTEINS, NUCLEIC ACID MOLECULES ENCODING HUMAN KINASE PROTEINS, AND USES THEREOF <130> CL001099-CIP-DIV2 <140> To be assigned <141> 2003-10-31 <140> 10/274,878 <141> 2002-10-22 <150> 09/849,334 <151> 2001-05-07 <150> 09/773,371 <151> 2001-02-01 <160> 4 <170> FastSEQ for Windows Version 4.0 <210> 1 <211> 2469 <212> DNA <213> Homo sapiens <400> 1 tegeggeeca ggtggtgegg geggeectag ceeggetqeg gagegetqeg eqaqeqqeqq 60 gctggctgac cccgagggac ccccagcgca gcgggtgcgq cqatgatcct qqaqqaqaqq 120 ccggacggcg cgggcgccgg cgaggagagc ccgcggctgc aqatatctag gaqaaaaccc 180 aggaaaacac gtgtgagctc tttacgggga agacgggaag gcctgagaga cgtgtgtgcg 240 tggagagggt gtcgggtcca cagaggggaa gacccagtgc gtgtgcacgt tggccccatg 300 aatcogcagc ttcatgcagt gggctgtgac tccctgacgc agatccagtg cggccagctg 360 cagagccgca gggcccagat tcaccagcag attgacaagg agctgcagat gcggacgggc 420 gctgagaacc tctacagagc caccagcaac aaccqqqtqa qaqaqacqqt cqccctqqaq 480 ctgagctacg tcaactccaa cctgcagctg ctgaaqqaqq aqctqqaqqa qctcaqcqqt 540 ggcgtggacc ctggccggca tgggagcgaa gctgtcactg tccccatgat ccccctgggc 600 ctgaaggaga ccaaggagct ggactggtct acaccgctga aggagctgat ctcagtgcac 660 tttggagagg acggcgcctc ctacgaggca qaaatcaggg agctggaggc cctgcggcag 720 gccatgcgga cccccagccg gaatgagtcg ggcctggagc tgctcacagc ctattacaac 780 cagetgtget teetggatge gegetteete acceetgeea ggageetegg getettette 840 cactggtacg actcgcttac tggggtcccg gcccagcagc gtgccctggc cttcgagaag 900 ggcagcgttc tcttcaacat cggtgccctc cacacgcaga ttggggcgcg ccaggaccgc 960 tectgeaceg agggtgeeeg cegegetatg gaggeettee agagggeege tggggeette 1020 agceteetga gggagaaett eteceatgeg eegageeeag acatgagege tgegteeete 1080 tgcgcactgg agcagctcat gatggcccag gcccaggaat gtgtgtttga gggcctctca 1140 ccacctgcct ccatggcccc ccaagactgc ctggcccagc tgcgcctggc gcaggaggcc 1200 gcccaggtgg cagccgagta caggctagtg caccggacca tggcccagcc acccgtccac 1260 gactacgtgc ctgtctcctg gactgccctg gtgcatgtca aggccgagta cttccgctcc 1320 ctggcccact accacgtage catggccctc tgcgacggct ccccagcgac cgagggagag 1380 ctccccacgc acgagcaggt cttcctgcag cccccacct cctctaagcc ccqagqccct 1440

gtgctgccgc aggagctgga ggagcgcagg cagcttggca aggcacacct gaagcgtgcc 1500 atcctggggc aggaggaggc gctgcggctg cacgccctgt gccgcgtcct gcgcgaggtg 1560 gacctgcttc gggctgtgat ctcccagacg ctgcagcgct cactggccaa gtatgcggag 1620 ctcgaccgtg aggatgactt ctgtgaggct gccgaggccc cggacatcca gcctaagacc 1680 caccagaagc cagaggccag gatgccacgc ctgtcccagg ggaaggggcc tgacatcttc 1740 categgetgg ggeeeetgte tgtgttetea geeaagaace ggtggegget ggtggggeee 1800 gtccacctga cccgaggaga gggcggcttt ggcctcacgc ttcggggaga ctcgcctgtc 1860 ctcatcgctg ccgtcattcc agggagccag gccgcggcgg ctggcctgaa ggagggcgac 1920 tacattgtgt cagtgaatgg gcagccatgc aggtggtgga gacacgcgga ggtggtgacg 1980 gagetgaagg etgegggaga ggegggegee ageetgeagg tggtgteget getgeeeage 2040 tctagactgc ccagcttggg ggaccgccgg cccgtcctgc tgggccccag ggggcttcta 2100 aggagccaga gggagcatgg ttgcaagacc ccggcatcca cgtgggccag tccccggccc 2160 ctcctcaact ggagccgaaa ggcccagcag ggcaagactg gaggctgccc ccagccctgt 2220 gccccagtga agccagctcc gccctcatcc ttgaagcacc cagggtggcc gtgagggcca 2280 ggatccctgc acgccctcag ccctggctcc agctggcagc aagcaccgag catgccctcc 2340 ccacccagag gacctccggg caatgcctgt cccgcctcat gctggaggct gcctcgggca 2400 aaaaaaaaa 2469

<210> 2 <211> 723 <212> PRT <213> Homo sapiens

<400> 2

Met Ile Leu Glu Glu Arg Pro Asp Gly Ala Gly Ala Gly Glu Glu Ser Pro Arg Leu Gln Ile Ser Arg Arg Lys Pro Arg Lys Thr Arg Val Ser 25 Ser Leu Arg Gly Arg Arg Glu Gly Leu Arg Asp Val Cys Ala Trp Arg 40 Gly Cys Arg Val His Arg Gly Glu Asp Pro Val Arg Val His Val Gly 55 Pro Met Asn Pro Gln Leu His Ala Val Gly Cys Asp Ser Leu Thr Gln Ile Gln Cys Gly Gln Leu Gln Ser Arg Arg Ala Gln Ile His Gln Gln 90 Ile Asp Lys Glu Leu Gln Met Arg Thr Gly Ala Glu Asn Leu Tyr Arg 105 Ala Thr Ser Asn Asn Arg Val Arg Glu Thr Val Ala Leu Glu Leu Ser 120 125 Tyr Val Asn Ser Asn Leu Gln Leu Leu Lys Glu Glu Leu Glu Glu Leu 135 140 Ser Gly Gly Val Asp Pro Gly Arg His Gly Ser Glu Ala Val Thr Val 150 155 160 Pro Met Ile Pro Leu Gly Leu Lys Glu Thr Lys Glu Leu Asp Trp Ser 165 170 Thr Pro Leu Lys Glu Leu Ile Ser Val His Phe Gly Glu Asp Gly Ala 185 190 Ser Tyr Glu Ala Glu Ile Arg Glu Leu Glu Ala Leu Arg Gln Ala Met 200 205 Arg Thr Pro Ser Arg Asn Glu Ser Gly Leu Glu Leu Leu Thr Ala Tyr 215 220 Tyr Asn Gln Leu Cys Phe Leu Asp Ala Arg Phe Leu Thr Pro Ala Arg 230 235 Ser Leu Gly Leu Phe Phe His Trp Tyr Asp Ser Leu Thr Gly Val Pro 245 250

Ala Gln Gln Arg Ala Leu Ala Phe Glu Lys Gly Ser Val Leu Phe Asn 260 265 Ile Gly Ala Leu His Thr Gln Ile Gly Ala Arg Gln Asp Arg Ser Cys 280 Thr Glu Gly Ala Arg Arg Ala Met Glu Ala Phe Gln Arg Ala Ala Gly 295 Ala Phe Ser Leu Leu Arg Glu Asn Phe Ser His Ala Pro Ser Pro Asp 310 315 Met Ser Ala Ala Ser Leu Cys Ala Leu Glu Gln Leu Met Met Ala Gln 330 Ala Gln Glu Cys Val Phe Glu Gly Leu Ser Pro Pro Ala Ser Met Ala 340 345 Pro Gln Asp Cys Leu Ala Gln Leu Arg Leu Ala Gln Glu Ala Ala Gln 360 365 Val Ala Ala Glu Tyr Arg Leu Val His Arg Thr Met Ala Gln Pro Pro 375 380 Val His Asp Tyr Val Pro Val Ser Trp Thr Ala Leu Val His Val Lys 395 390 Ala Glu Tyr Phe Arg Ser Leu Ala His Tyr His Val Ala Met Ala Leu 405 410 Cys Asp Gly Ser Pro Ala Thr Glu Gly Glu Leu Pro Thr His Glu Gln 425 Val Phe Leu Gln Pro Pro Thr Ser Ser Lys Pro Arg Gly Pro Val Leu 440 Pro Gln Glu Leu Glu Glu Arg Arg Gln Leu Gly Lys Ala His Leu Lys 455 460 Arg Ala Ile Leu Gly Gln Glu Glu Ala Leu Arg Leu His Ala Leu Cys 470 475 Arg Val Leu Arg Glu Val Asp Leu Leu Arg Ala Val Ile Ser Gln Thr 485 490 Leu Gln Arg Ser Leu Ala Lys Tyr Ala Glu Leu Asp Arg Glu Asp Asp 500 505 Phe Cys Glu Ala Ala Glu Ala Pro Asp Ile Gln Pro Lys Thr His Gln 520 Lys Pro Glu Ala Arg Met Pro Arg Leu Ser Gln Gly Lys Gly Pro Asp Ile Phe His Arg Leu Gly Pro Leu Ser Val Phe Ser Ala Lys Asn Arg 550 555 Trp Arg Leu Val Gly Pro Val His Leu Thr Arg Gly Glu Gly Phe 565 570 Gly Leu Thr Leu Arg Gly Asp Ser Pro Val Leu Ile Ala Ala Val Ile 585 Pro Gly Ser Gln Ala Ala Ala Gly Leu Lys Glu Gly Asp Tyr Ile 600 Val Ser Val Asn Gly Gln Pro Cys Arg Trp Trp Arg His Ala Glu Val 615 620 Val Thr Glu Leu Lys Ala Ala Gly Glu Ala Gly Ala Ser Leu Gln Val 630 635 Val Ser Leu Leu Pro Ser Ser Arg Leu Pro Ser Leu Gly Asp Arg Arg 650 Pro Val Leu Leu Gly Pro Arg Gly Leu Leu Arg Ser Gln Arg Glu His Gly Cys Lys Thr Pro Ala Ser Thr Trp Ala Ser Pro Arg Pro Leu Leu 680 685 Asn Trp Ser Arg Lys Ala Gln Gln Gly Lys Thr Gly Gly Cys Pro Gln 695 Pro Cys Ala Pro Val Lys Pro Ala Pro Pro Ser Ser Leu Lys His Pro

Gly Trp Pro

<210> 3 <211> 19025 <212> DNA

<213> Homo sapiens

<400> 3

ccaccctgtc tcaaaaaaaa aaaaaaaggc cagtcacagt ggctcacacc tataatccca 60 acactttggg aggccaaggc aggcagatca ctggagctca gaagttcaag accagcctgg 120 gcaacagggc gaaaccctgt ctcaattttt ttttccttta taaattacaa aagagaaaac 180 gagcataaag cagccccatc agcaattatc acctcatctg caaaaggtcc cggcgctcac 240 tgccgtgccc ctcccgccgc tgtccagttc cctgcctgtc acaccaaaat tctcctctac 300 tttctcacct cccatccttt catttttccc cctaaatttt taaacttcag aagtgcacaa 360 tacacatgta acaaacccac acatgtacct ccaaatctaa aataatttaa aaaaacaaaa 420 aggaaactct aaattttttg agtgcagtga tacattcttg ctgtgccaaa tccagtaaca 480 cagaagcatg caaagaaaaa ggcagcacca ccccctcca acacacaca acacacacac 540 acacgcacac acgcacatat gcacgcacac acacgcacac gcacacacgc acacgcacac 600 actccagcct gggcgacaag agcaagactc catctcaata aataaataaa gaaaatagta 660 attgaatatt ttccttcagg aaacagcacc ctgcagggag gggaagtctt atgaccctca 720 aagtttgaga gcctctctta acttcccaat ggcctctgtc tgctgaacca agaagcctgc 780 aaaacaaata cgtaagaact ggataccatt tcagtcacac atgcttgctg acagtcactg 840 atatggtaat gcctcctgta cacatagctg actctgaaga ctgctaagag ggtttgggtc 900 tctgctgtac aggaccttgg cagcctgcaa ggagatgact cacatggaag tccccacaca 960 agtgcaccca gtgtgaactt tggaagcatc ggcccatgct caggcccaca ggtaagatgg 1020 ccaggagccc ctgcccttga ggaaacttga accacagagc tgctggcgaa gggggtgggt 1080 gaaggtetea tgtageetgt gtgatteagg cagaagtgag aaggaegggt gggaaeceae 1140 caagtggacg acaagctgaa gggctcccag ggagcagaca cttcaagggc cccaaaaggc 1200 caggagaaag aaaaaaaaa gccgggtatg gtggctcatc cctgtaatcc agcacttttq 1260 ggaggttgag gcagatgaat tgcttgagcc cagaagtttg agaccagcct gggcctgggc 1320 aatgtggcga aaccctgtct ctacaaaata tacaaaaatt agccgggtgt ggtggtgcaa 1380 gcctgtagtc ccagctattc aggaggctga ggtgggagga tcacatgagc ccaggaggtg 1440 gaggetgeag tgagetgtga tegtaceaet geaeteegge etggggaaea gagtgaggee 1500 ctgtctcaaa aggccaggag tggaagacag gccctagcca ggaggtttca cgtggctggc 1560 aggggcctta tgagaaggct gttgctggga ggggcctgct gcagatggct gcggcagacc 1620 acggagetta geetteagga tttagatetg gggatgaeag geteetgtgt gettgttgeg 1680 gagccgggag cacaggcacc agaatgatcc cagggctcag ctccaaggct ccgctgggcc 1740 tgtggtgggg cagtgaacgt ggacaagacc tgggcttcag aggaacttga tgaccaggag 1800 gcgagaccca cacgaaatcc gagcgggctc cggagtcacc agacacctag ggaagtatgg 1920 aaggcccgga aggacacaca cagccgggtg agccccgcag ggagctgtgc agtctcaggt 1980 cgtccagtcc tggggctgca ggccagttct ccaagcaggt ggtcctggag gcaagctggt 2040 tttgaaagta ggttctgaaa ataggtcagt ccaggaaaca agctctggaa gtaaagagat 2100 tcggaaagca ggttcgttct ggaaacaagt tctacaaaca ggtagttctg aaagcacgtg 2160 ggttccagag gcaggtgcta gaaggatgtg ggttctgtac ggaggttctg gagggaggcg 2220 ggttctggac ggaggttctg gaaggaggcg ggttctggag gccggttttg gaagcaggac 2280 gacaccgaca gaggegeete ggaetgggge caggeetgga geeteegete egegggeaga 2340 gagaagaaag caggcattgt cggaggactc acacaagcac ttgtccctaa caaaaccgtt 2400 tttaaaaacc ccattgtgaa catttttgga acaagcctct tagagggtcc cgttgccggg 2460 gtgacaggac gaaacggcgc gagcgggcag actcctggag tccccgcaaa gggagccgag 2520 gagetaggeg egeegagtee aggteegeee tgaeteteag ettgggaegt teegtatagt 2580 ttttttctcc gtttcccgaa cttctcccgc acgctcagcg gccgccgcgg cgcatgcgca 2640 gtacaacctg ccagccagcc gcgggcgttc cggccgcggt tgccaggggt taccgtcccg 2700 cgggcgggcg gagctggccg tccagagccc gccttcctgg aactctggtt ggctgatata 2760

gctgtccgtc	gaagcggcat	tgccgcctat	tgggcaatqq	ccaqcttcqc	acgccagacc	2820
					cggggaccgg	
					ggctgcggag	
					ggtgcggcga	
					cggctgcagg	
					ttcctgcccc	
					gacgcaggca	
					ggtgcttcca	
ggccactcat	ataaaccaaa	aaatgcggac	agccaaagtc	tagateatee	tcaccgctga	3300
agcagattag	addaycaccc	tecteatate	cccttctaa	acaatataa	ggctgggatc	3360
tataaacacc	ctcccacac	ccaccatcat	attectttee	acceptate	cagcctcctt	3420
					ggtgcactgg	
tagcagcggg	cadcdaadcc	tectagatat	addagaccae	gagaggtett	cccggctggc	3540
ctcttctcac	ttcccaaacc	teetteett	ctgaagtccc	taacccaaaa	tgctgactgg	3600
					gggaaggagg	
					gaccagctcg	
					gctttcagcc	
tetagazaat	gagatatat	tataaataaa	atcattata	agegegege	cctcctccc	3040
					tgtttggggt	
					gtcactgggc	
					gcgtgccaga	
					cccctgtgaa	
					ttgttttggg	
					gtgacgcttt	
					ccaccttgga	
					aaatgacccc	
					gcaggccctg	
tgtcacacgc	gcaccactca	ggctgtcctg	ccatctggaa	agtcttcccc	gatgcctgct	4440
gccgggctag	agtgaggcct	gttccacccc	catcaggctg	gcccccaaac	tggccctaaa	4500
gctcagagtt	cagtgggtca	ggggtcggtc	gttcatccac	ttagaggcca	cacctgggcc	4560
					gagagcaggc	
ttccagcaag	cgcttacctg	gtgccagggc	cagtgctaca	gctggagtcc	tgccattggt	4680
					ggccaaggct	
gccaagctgg	gaaggggaga	agcctggcac	ggcccagggt	ggccaaccca	gctgccgtcc	4800
ctcccgcagg	ggctgcaggg	gctcccgggg	gaggaccaca	aggaatacag	cctggctgta	4860
tgcagaaggt	tctgtggttt	cctggggagg	ccagtgggag	aagggggagc	aggctgcaga	4920
gggagagcgt	tggagcagca	ggtgggcagg	gtggctgtgc	cccctcacc	tggtctccag	4980
catgccgagt	gggtcagcct	gaggttcccc	agcctggctg	gacaggagca	ccctctgggt	5040
					gaggggtgct	
					gtccctgccg	
tgagtggcca	gtctatgatt	cctctggcgt	gcgtgctgct	tatagccctg	tgtcccagga	5220
gacacctgtg	cagcaatgcc	ctttgaattc	tgttccctca	tcagtggggg	gcagagatgg	5280
					cattcaggtg	
					gcatacaggg	
					tgacctctcc	
					ctggccctgc	
					tttgcccgtc	
					aggagcccca	
					gcatggccag	
					tgtcctttcc	
					agaagtagaa	
					aggggcctga	
					gaaagtgggg	
					gtctgctcct	
					ggaggccgag	
					tccccgcagc	
tetectagag	CCaddadada	==3303cccac	taactaaata	tetgatgee	gtcgcacagc	6120
		3 3 3 3 4 6 6	-55555-5		Judgeacage	3100

```
cagageeett aaagetgetg gageettgea geggggeett tgeggggagg gggtgtaget 6240
geggtgggtg geacgggggt etectaggta etgggeagag geeetegagg tggtagegee 6300
ggtgggaaag gtagggatgg gaggcggggg tgggcgggcc tcaggttcag ggagcttctc 6360
agatetgagg egeceatgee eeteteecae etgtgggeet etecageeeg agteeetgaa 6420
gcagctctgg aggtaatttc ttttctggag gaggcgggag tgagaaacgg gagcagggtg 6480
agggttccca agtgcacatc ggcccgtccg ctgctgggtg gtgtccacgg gggcagggct 6540
gggctggggg aggccagggt cctgggccgg cacaccctcc ttccggctgc ctgtgtccct 6600
ccctccagct gcctgtgtcc atccctccgg ccgcctgtgt ccctccctcc ggcccctaag 6660
cgccaactca tetteagtte agggacetee gteaggetee eteaceceag cacteageag 6720
gaggetgeeg geetgggtgt ceaggggatg gtgegggtgt ceageagaea qtaeaggqqt 6780
ttgggggatg gtacaggtgt ctgggggatg gcgtgggtgt ccagcagatg gcgcaggggt 6840
ttgggggatg gcacaggtgt ctgggggaca atgcgggggt ttgggggatg gcgtgggttc 6900
caggggatgg tgcaggggt tgggggatgg tgtgggttcc aggggaccgt gtgggggttt 6960
ggggatggcg tgggttccag gggatggtgc aggggcttgg gggatggtgt gggttccagg 7020
ggacggtgcg ggggcttggg gatggcgtgg gttccagggg acggtgtggg ggtttgggga 7080
tggcgtgggt tccaggggac ggtgcctcat cctccagtct ctgtctctgc cttcccatgg 7140
ccacctccat gtgactgtgt tcaaattccc cacctcgtat aaggaccctt qtcactgcqa 7200
ttaaggaccc cctactccag ggtggcctca tcttaactca ttatatctgc aaagacccta 7260
tttctagaaa aattgcagtc acaggtactg ggagtcagga cttgaacctg tcttttgtgg 7320
ggacacaatt cacccataat agatggtcac cogctcagct ggctgctgtg attttggggg 7380
gctggacgag caggccttct gtctaggaaa tcaaaccttt cttgtataat gggaataaac 7440
taattaaaat gcacacaaag atctcgttca cattagcaaa aagaactctc tccagatatc 7500
taggagaaaa cccaggaaaa cacgtgtgag ctctttacgg ggaagacggg aaggcctgag 7560
agacgtgtgt gcgtggagag ggtgtcgggt ccacagaggg gaagacccag tgcgtgtgca 7620
cgttggcccc atgaatccgc agcttcatgc agtggtaggt cagtttcatg gtggcaagat 7680
tcaccttcag acgccacaag gtcctgggga agaagaggtc ctgtctcccg acaagggcgg 7740
gaagcagtcc caggagccac cagaggcctt gtcttgctgc tgactggcag aaatggccag 7800
gttggccacg cctgactcag accaggctcg ccccagggct gggtgggagt cagtgtccct 7860
gagcagtgag ccctgagcag cactgtgggt ctcaaagcat ggaaggagtg ggtgctggag 7920
aggcaagcca gccagcccac gcctgggagc ccacccaggg gacagccaca ggtagctgca 7980
aataatcttg tccgggtgga gacccaggca ttcccacatg gccacgggga agagtggggg 8040
ttgggaggcc atggtgagag ggagggacac gtgaggatca tgtgggcagg accccaacac 8100
cacaagggtg gggtgggctg aggcatgaaa ctggatctcc ctagagtgaa atgtaagctc 8160
cagcacgctg gcaccactga cgacacagga gccatcaaag tccagaaggg gccccgctgg 8220
gcacgcccca ctctttcgcc atggctggtg ctgggcaggg ccgcggggct gcagtctggg 8280
tgcaaggctc agagtcattt ctctgtggat agggaggca cgggtgtgcg ttcgcttcga 8340
gaaccattcc caaagtcaga ccgcagcctc tgcaccaacc atcgggggcc agtggccgcc 8400
cccagagcct cagggaccct gtcctttgag cccacgccta aacccacatg ggaatgattt 8460
ggaggcgtgg gtgagttgga tgggaaaaaa attgggaggg gcaagggggg gatccagaat 8520
gaaatccaga agcgcagaag gaaggctgtg aggagcagtg ggccgcctcc tgcagggctc 8580
ccggagcccc tacttgtcca ggctgcctgg tgagaccctg gcttctggtg tccttggcag 8640
gtgccagcct cccccgctga cccccatcac gagtcagcag cttaccccac cgaccacgtc 8700
cttctgcatt gactgcctcc tgtcctgctc tggccaggcc tgtgttcaca ctagttctgt 8760
ccagcccctc cctgtgaggc cagctccagc cccagcgcat ggtgaccatc ccgttaccca 8820
tgggcaggat gcactcctct cagtggctgg cgaggcgcag cctggtgcgg gcgccacggg 8880
gtcgggctgt gatcgcctgt ggcctccctg cagggctgtg actccctgac gcagatccag 8940
tgcggccagc tgcagagccg cagggcccag attcaccagc agattgacaa ggagctgcag 9000
atgcggacgg gcgctgagaa cctctacagg tcagtgcttg agactgcccg gccccgggag 9060
cagggcccac ctgggtgagg ggggcaggac agccacgcag gcagatgtct gccccatggc 9120
cgggtcacag agacaggtgc atgagcagct gggtcctggt gggcacgtag tacacgtgat 9180
gctcagccat gaccctcaca gacctgcctc cgtgggcctc tgtgctgggc tggaggtgcc 9240
aggaaaccag tgtccctgcc gggtgtgcag cttgggaagc cccaacagtg cacgtggggg 9300
cttctcagaa gaggcatggt tgaggctgag ctgtggcagg tgacggcgcg tcccaaggtt 9360
ggggacctgg gagggggtgg aagacctggg ctgcctcttc cttagagcac accgcctgtg 9420
tgccacacat gtgcgtgtga gtgcccctcg gtccccttag cacctgctac ctcgctgccc 9480
ccatcctggc cttccctggg gacctccggt ccctttgcca ggccctgatg caggcacaga 9540
gaggtgtgtg geteteacee accateeaag gagtgatgtt tgagtgetgt egagggetgt 9600
```

atgagcccca	aagaaagccg	tggtgctgag	ggaggtgccc	ccaggccaga	gtcggaacat	9660
	gggtcggggt					
	cctgccccac					
	gctttgacag					
	ggggctgggc					
	gagacggtcg					
	ctggaggagc					
	ggacagcacg					
	catgtgtgtc					
	gtgcatgcat					
	gcgtgtgtct					
	tgtgtgcgcg					
	tgtgtgcacg					
	tatgtgtgcg					
	tgcacgtgtg					
	tgtgtttgtg					
	tggggcggtt					
	ggcgcacgtg					
	accccgggct					
	tacagcgaag					
	gactggtcta					
	ccctgggacc					
	gaaactgagg					
	ccacagggac					
	ggctgatccc					
	gaggatgggg					
	ccactggctt					
	cagactggca					
	cactgagtgg					
	aaagtagcgc					
	caggggctcc					
	tctctggggc					
	tgcggcacag					
	ggaaggaggc					
	atctcagtgc					
	gccctgcggc					
	atgcagaggc					
	gacgtgggga					
	aggggctccc					
	agggccccac					
	gggcagtgtg					
	ggccatgcgg					
	ccagctgtgc					
ggctcttctt	ccactggtag	gggctctgcg	ggcggaggca	ccctggggag	gggaggccca	12240
gctgcgggaa	ccgtgggaac	tccacccagc	ctgacccaac	actgcaggta	cgactcgctt	12300
	cggcccagca					
	tccacacgca					
	tggaggcctt					
gcacggcgcg	gtgccagggt	gttgcagagc	cccttttgca	gggcaggagc	tggggagtgg	12540
	agtccctcag					
	gctggccgcc					
ctgcctgtgt	gagcacccct	ccctccgcag	gggccttcag	cctcctgagg	gagaacttct	12720
	gagcccagac					
	ccaggaatgt					
	ggcccagctg					
gtgtcaggat	gcagggggtg	gggccgagct	ggggtcagag	cccaggtcca	ggcatgcgtg	12960
agctctccca	cctccttcct	tgtgtgtcag	ccccgagcca	gctgttgtcc	tgctccctgg	13020

```
gggggctggt caggaacctg gggacccgag cctctgcctc caggggatgg cacaaagcag 13080
caggaactga ggtgccaggg aggctgctgg gatggtggtc ggagcaggtg gaggctgggt 13140
agggagaagc aggcaccacc tggagagtgg gaggccctcg cgtgcctgcc acatccaccg 13200
gcaggtggca gccgagtaca ggctagtgca ccggaccatg gcccagccac ccgtccacga 13260
ctacgtgcct gtctcctgga ctgccctggt gcatgtcaag gccgagtact tccgctccct 13320
ggcccactac cacgtagcca tggccctctg cgacggctcc cgtgagtgcc caccgcactt 13380
gcccatggta ctgccaaggc cccccgcgc agggctcaca gcctctctgt cccccagcag 13440
cgaccgaggg agagctcccc acgcacgagc aggtcttcct gcagcccccc acctcctcta 13500
agccccgagg ccctgtgctg ccgcaggagc tggaggagcg caggcagctt ggtaaggcgc 13560
ccatgggtgg agtgccctgg ggctcagatg gtcaccaacg gtggcagggt gtcccccacc 13620
acceteatge tgtttgeeae etgetgteee egtgetgaeg agttgggeea eetaeetate 13680
cctggatggc ctgtgcctga tgggtgacgg cccagcgcag gggccccagg agtgctgggc 13740
agcetetgag caggtgggag accaetggga geageteate cetggeeeet getttgeaeg 13800
tggcagagcc ctcctgcaca gccagctcct cacccccgtg gcgcgcaccc ccaacgaaag 13860
tggctgtgat gagccccaca gccctggcgt tgcccactcc ttctgccacg tcccagggcc 13920
cacgggccca catggtgtgt gacatcccag tgccccgcgt gcaggcaagg cacacctgaa 13980
gcgtgccatc ctggggcagg aggaggcgct gcggctgcac gccctgtgcc gcqtcctqcq 14040
cgaggtggac ctgcttcggg ctgtgatctc ccagacgctg cagcgctcac tggccaagta 14100
tgcggagctc gaccgtgagg atgacttctg tgaggctgcc gaggccccgg acatccagcg 14160
tgagcagcca gggcctgtct gggtggctgc atccctggcc agggtggggg ccttcgtcct 14220
ggagaaaggg aggctgattg cattaaagat gcagtcacca cgatgaatta aacagcagta 14280
gcactttcca ggccacgatc acagggaccc acagagctgc tgggcccttc aggggcctgg 14340
gggatgacca cgctcctcag cacctccctc cctgcactgg cctcctaccc tgaggggaag 14400
cccacagacc caggacaggc atggctggga cttcagggag ggattttggg agccacttgg 14460
ggcagagggg gctgtgtgtt cagggcacac ctggggcagc tcctcccacc attgcagagt 14520
ggccaggcct ggaggtcaga agcggggcct gtgtgcactc agggtcatgc cctgcgccct 14580
cagctaagac ccaccagaag ccagaggcca ggatgccacg cctgtcccag gggaaggggc 14700
ctgacatett ccateggetg gtgageacae cegteeceag geacegeeca geatgggeag 14760
cttgggctgt gtggctctga ccagcacatg gcctcagaca ggccattgat ggtggtccag 14820
ccctccccac ccaccttgtg gaaccccacg gtgtccctcg gtgcacaggt tggatggatg 14880
tgctagtcag gtggggtctc ctcagtgtgt ggcccagctg ggcctctgac ctctgagccc 14940
ctgccagggg cccctgtctg tgttctcagc caagaaccgg tggcggctgg tggggcccgt 15000
ccacctgacc cgaggagagg gcggctttgg cctcacgctt cggggagact cgcctgtcct 15060
categotgcc gtcattccag ggagccaggc cgcggtaagg gccccgccgg ccccctgagg 15120
ctgagtcctt ggtgccagcc agggtgtcct gtccccact caccgtccaa gtctccccac 15180
aggcggctgg cctgaaggag ggcgactaca ttgtgtcagt gaatgggcag ccatgcaggt 15240
ggtggagaca cgcggaggtg gtgacggagc tgaaggctgc gggagaggcg ggcgccagcc 15300
tgcaggtggt gtcgctgctg cccagctcta gactgcccag cttggtgagc ccctggggcc 15360
ccagagggc ggtccccagc ttgctgtcac caccctggcc ctgggcctgc cttggatgct 15420
tgagcaacat tgggaagggg aggtggggct gcaggtaacc ctccctgggc cgcctcctgg 15480
gcaggggcca cctgtgctgt ggcctccatc tggcagctct tgccctgacc ccgaggatgc 15540
tgcagcccac ccctcactgg gcctctgtat cctcagactg gaggcttctg ggccaggcgc 15600
tccatcccag aggttttctc tacccagcat ggctgaccca gggttgggtg aaacccatgg 15660
gcccctgcta tgtggccacc ctgatgggag cccccaaaca agcccccgac gtgccagccc 15720
ctcccaggtg gttctcaccc ctcccagact ggctgcaggt ggggacaggc cagcagtggc 15780
tgaccacagt ctgtctctgt ccctgctgca gggggaccgc cggcccgtcc tgctgggccc 15840
cagggggctt ctaaggagcc agagggagca tggttgcaag accccggcat ccacgtgggc 15900
cagtccccgg cccctcctca actggagccg aaaggcccag cagggcaaga ctggaggctg 15960
eccecagece tgtgeeceag tgaagecage teegeeetea teettgaage acceagggtg 16020
gccgtgaggg ccaggatece tgcaegeete agecetgget ccagetggea gcaageaceg 16080
agcatgccct ccccacccag aggacctccg ggcaatgcct gtcccgcctc atgctggagg 16140
ctgcctcggg cacctgcctg cccattaaag actggtcaga cctgtctgag cccagtgatg 16200
ggagctgtgg cctcttcacc cacacacaga aggatgccag tccctctgtc ggtctgaggt 16260
cagetteetg gggetgeece accetgaggg eteettacag ggtgeteete acagecatee 16320
catctgtacc cccgggctct gtccaccctg ctgctgccct gggcacagac cctgaggtct 16380
cagtcctgcc tccagccaag tttctgcctg gtgcccagtg attcctgctg ggcacccctt 16440
```

```
egeteactge ecetecacea tgeageagee agacacee acageaceeg aagaceteta 16500
ggccgggtcc cagacatggc cttcccccaa aatacttcct gctgtcctgt ctgtgcacag 16560
agcaagggac tececacete tgegeeetgt getggteate atgggetetg tgetggteaa 16620
cccagcaagt gtcccgtttg cccaggagtc cctggtgtcg tggcccaggt ctcatggtgg 16680
ccctaagcct gccagccctg ctgcccgcct tgctgtcctg ctctgagcat gggtgccacc 16740
ctccagctcc tgggcgtgtc acttctctct gagcctgggg cctgcatggg cccccagccc 16800
tececageet gettgggeeg etectgetgg cetecacagg eegtgagetg teagtgtete 16860
aagcagggga agtgagggct gcctccaggc ctccgtgtac tgggtggaca atggccccca 16920
aaggccgtcg gcaagaacac cacctccagg acccctacag cagtgggctc aggacttggg 16980
caccaagagg agagggtggg aagggctgca gagtcagggc tgcacccaag aggagccacg 17040
gagccggagc cggagcggag gcccccaccg agggccccag ggcctggcag gttccggaag 17100
agacagggcc agcgggagtc attccctgca gccactaggg ggcagccgcc acccgctcag 17160
cagccctggg aggcggcacg ggcaggtgcg ccttgggagg gctgaggcaa agaccccggg 17220
tagaaaggcg gcccccagct ctgcgagacc cctgccctct tgtccagtcc cttccgaggg 17280
teegeaggtg agageageet geeetgeate ceaggetetg gtteeagggt ceagggeeet 17340
gcgctgccac ctccctcgtg cttcagccaa gaaaatgggg gtgcaagtag ggtgtttggg 17400
gtcccagaga cgcaggcgcc gcggcgcgat cttcctgggc aggagggcag ggctccccaa 17460
cctgcctgag ccggggtggg ggtccaggtc ccccacttgc ccttgtggga aaatccctgt 17520
ctcagcagaa tgggccaagg tcacgcaggt ctccccagca cgtgttaatt tggttaataa 17580
aactgtggat caaggaggcc agtaggcact aactggggat gacagggtgg cagccctgtc 17640
tgggaagtgc agggactece cacetectgt ggeetgtega gacecaaget ggggacagag 17700
ctgccacctg cctcctgcat ggtgggcgcc aggccaccat agcctggggg agggggcttt 17760
tgcccagaga gcacgcctct ccccaccgca gacccctggg gtgcgcccaa cccgtcccac 17820
ccctgcccac acatgcctct cccctggctg ccaccaagcc tgggcctgtg ctcctggccc 17880
tgccctctgc cccaggccat ctcctcccct getgcccccc cccccgccgt cgtgtccctc 17940
tgccacagag ggggggcctc acagctgaag ccacacgtgg ctgggacctg gctcccgtca 18000
ccgcctccgt cctgtgaagt ggaggaagcc tggtgcacag gggtgctgtg gcgatgtggg 18060
gggccctgag gtcctgctgc cagccagggg gaggggggcg gaggtcctgg gatctggggt 18120
ccagagttet agtcaaggca gggctgggca ggaggggggt ccccctcccc accttccact 18180
tggggetget etecagaaga gaaageggat geetaceage eeageeeete agaettggae 18240
catgcccctc cggcatctgt gggagtcctg ccagacagcc cctgggctgc gggaagggac 18300
cgcgccccat cccatcctca tccctgcagt agctggtggc tgcctgcccg gcgcaggggc 18360
ctgctgaaca ggggactgcc ctgtccagcc cacccacggg actccaagtc cacacaggca 18420
gcagagtcgg cagcggtggg cagagtgggg gggcatcacc atggctcctc agggactggt 18480
caagggtgtg atgcctggcc tggcaggacc tgcagtttca cccccggggc cagctgtggc 18540
ctgtgccccg ccagagggca gtgcagcccc tggggccagc acacaggagg cgqcagctca 18600
gggtcctgtc ccatctgccc aggctaggga gcaaagcagg atcagggcga ggctgcgagg 18660
ctgggggaag gcagggctgg ccgctgggga gcgctcggtc cgcaggctgt gcggtgagag 18720
ccactgggtg aggetteccg gggggcacag etgeecegag gggeeggete aaggetgtee 18780
ctgcagcage acgtgttggt gettgeetge ceceeegga gegeeacace geggeetetg 18840
tggagcccgt tctcttccct tgaagtcctg cttgcgcact cctgggcgtt tctggctagc 18900
acctttttgg cttttaggga cgggttagtg tcccttcctc agatggcccg gcctggacac 18960
accccatgca tgggccttag ccccacttt ctgggccagc cttatcactt tgggcactgt 19020
gtcac
                                                                  19025
<210> 4
```

```
<210> 4
<211> 634
<212> PRT
<213> Mus musculus
```

<400> 4

 Met Ile Leu Glu Glu Arg Pro Asp Gly Gln Gly Thr Gly Glu Glu Ser

 1
 5
 10
 15

 Ser Arg Pro Gln Asp Asp Gly Ser Ile Arg Lys Gly Tyr Gly Ser Phe 20
 25
 30

 Val Gln Asn Gln Pro Gly Gln Leu Gln Ser His Arg Ala Arg Leu His 35
 40
 45

```
Gln Gln Ile Ser Lys Glu Leu Arg Met Arg Thr Gly Ala Glu Asn Leu
                        55
Tyr Arg Ala Thr Ser Asn Thr Trp Val Arg Glu Thr Val Ala Leu Glu
                    70
Leu Ser Tyr Val Asn Ser Asn Leu Gln Leu Leu Lys Glu Glu Leu Ala
Glu Leu Ser Thr Ser Val Asp Val Asp Gln Pro Glu Gly Glu Gly Ile
                                105
Thr Ile Pro Met Ile Pro Leu Gly Leu Lys Glu Thr Lys Glu Leu Asp
                            120
Trp Ala Thr Pro Leu Lys Glu Leu Ile Ser Glu His Phe Gly Glu Asp
                        135
                                            140
Gly Thr Ser Phe Glu Thr Glu Ile Gln Glu Leu Glu Asp Leu Arg Gln
                    150
                                        155
Ala Thr Arg Thr Pro Ser Arg Asp Glu Ala Gly Leu Asp Leu Leu Ala
                165
                                    170
Ala Tyr Tyr Ser Gln Leu Cys Phe Leu Asp Ala Arg Phe Phe Ser Pro
                                185
Ser Arg Ser Pro Gly Leu Leu Phe His Trp Tyr Asp Ser Leu Thr Gly
                            200
Val Pro Ala Gln Gln Arg Ala Leu Ala Phe Glu Lys Gly Ser Val Leu
Phe Asn Ile Gly Ala Leu His Thr Gln Ile Gly Ala Arg Gln Asp Cys
                    230
                                        235
Ser Cys Thr Glu Gly Thr Asn His Ala Ala Glu Ala Phe Gln Arg Ala
                                    250
Ala Gly Ala Phe Arg Leu Leu Arg Glu Asn Phe Ser His Ala Pro Ser
            260
                                265
Pro Asp Met Ser Ala Ala Ser Leu Ser Met Leu Glu Gln Leu Met Ile
                            280
                                                285
Ala Gln Ala Gln Glu Cys Ile Phe Lys Gly Leu Leu Leu Pro Ala Ser
                        295
                                            300
Ala Thr Pro Asp Ile Cys Pro Asp Gln Leu Gln Leu Ala Gln Glu Ala
                    310
                                        315
Ala Gln Val Ala Thr Glu Tyr Gly Leu Val His Arg Ala Met Ala Gln
                                    330
Pro Pro Val Arg Asp Tyr Leu Pro Ala Ser Trp Thr Asn Leu Ala His
                                345
Val Lys Ala Glu His Phe Cys Ala Leu Ala His Tyr His Ala Ala Met
                            360
Ala Leu Cys Glu Ser His Pro Ala Lys Gly Glu Leu Ala Arg Gln Glu
                        375
                                            380
His Val Phe Gln Pro Ser Thr Pro His Glu Pro Leu Gly Pro Thr Leu
                    390
                                        395
Pro Gln His Pro Glu Asp Arg Arg Lys Leu Ala Lys Ala His Leu Lys
                                    410
Arg Ala Ile Leu Gly Gln Glu Glu Ala Leu Arg Leu His Thr Leu Cys
            420
                                425
Arg Val Leu Arg Lys Val Asp Leu Leu Gln Val Val Thr Gln Ala
                            440
                                                 445
Leu Arg Arg Ser Leu Ala Lys Tyr Ser Gln Leu Glu Arg Glu Asp Asp
                        455
Phe Phe Glu Ala Thr Glu Ala Pro Asp Ile Gln Pro Lys Thr His Gln
                                        475
Thr Pro Glu Gly Pro Leu Ser Val Phe Ser Thr Lys Asn Arg Trp Gln
                                    490
Leu Val Gly Pro Val His Met Thr Arg Gly Glu Gly Gly Phe Gly Phe
```

Thr Leu Arg Gly Asp Ser Pro Val Leu Ile Ala Ala Val Val Pro Gly Gly Gln Ala Glu Ser Ala Gly Leu Lys Glu Gly Asp Tyr Ile Val Ser Val Asn Gly Gln Pro Cys Lys Trp Trp Lys His Leu Glu Val Val Thr Gln Leu Arg Ser Met Gly Glu Glu Gly Val Ser Leu Gln Val Val Ser Leu Leu Pro Ser Pro Glu Pro Arg Gly Thr Gly Pro Arg Ala Ala Leu Leu Trp Asn Gln Arg Glu Cys Gly Phe Glu Thr Pro Met Pro Thr Arg Thr Arg Pro Trp Pro Ile Leu Gly Trp Ser Arg Lys Asn Lys Gln Gly Lys Thr Gly Ser His Pro Asp Pro Cys